



- Sealed lens shaft for liquid immersion, pressure and vacuum applications
- Swageable focusing lens shaft
- High collection efficiency and effective laser line filtering
- Fused silica optics
- Customizable stainless steel armor optical fiber cable and focusing lens barrel
- Cost- \$5200

High throughput optics and a backscattering probe optical design are incorporated into our compact Raman probes, resulting in a highly efficient probe for Raman measurements. The probes are ideal for Raman measurements of various samples including solids, liquids and gases. Raman probes are available in various laser excitation wavelengths in the visible to the near-infrared. Narrow bandwidth bandpass filter is utilized in the excitation optical train to filter out unwanted silica background generated by the excitation laser in the optical fiber. High Rayleigh rejection long-pass edge blocking filter (optical density $>10^{-6}$) is also incorporated in the collection optical train to prevent the laser line from being transmitted into the collection optical fiber.

The industrial Raman probe is a ruggedized probe that can be used for more demanding applications, such as direct liquid measurements, pressure and vacuum applications. The probe body is encased in a hard anodized aluminum housing. The focusing lens shaft is made of stainless steel with a step fused silica window (also available in sapphire) compression sealed at the tip with a Kalrez[®] o-ring. The focusing lens is located inside the tube and behind the optical window. The optical fibers are also removable allowing the user the flexibility of using the proper fiber core optimized for a specific Raman instrument.

Specifications:

Excitation Wavelength	514, 532, 633, 670, 671, 785, 808 nm. Other wavelengths available
Spectral Range	100-4000 cm^{-1} (The ultimate range is spectrograph/detector dependent.)
Focal Length	9 mm standard (12, 15 & 18 mm optional) Note: Probe efficiency decreases with increasing focal length)
Spot Size at the Sample	100 microns for standard fiber (fiber core dependent)
Working Distance	3 mm for standard lens
Numerical Aperture	0.22 with standard lens
Probe Body Dimensions	2.25" L x 0.96" W x 0.58" H
Probe Body Material	hard anodized aluminum
Probe Shaft Dimensions	3/8" diameter x 3" length (custom lengths available)
Probe Shaft Tip Seal	Kalrez o-ring
Probe Shaft Material	316 stainless steel (Hastelloy C276 or Inconel optional)
Probe Shaft Window	fused silica or sapphire
Filter Efficiency	O.D >6 at laser wavelength
Operating Temperature	0-250 $^{\circ}\text{C}$
Maximum Operating Pressure	6000 psi
Fiber Configuration	100/100 micron core standard, custom optical fiber cores available
Fiber Optic Cable	5 m reinforced stainless steel armor cable standard, custom lengths available
Coupling System	FC Connector standard, SMA connector also available.
Part Number	SPS-RD